FOOD AND DRUGS

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Report on Coffee Investigations—Massachusetts Institute of Technology.—It is concluded that coffee has a stimulating and fatigue-relieving effect due to the action of caffein which acts on the central nervous system. They find that coffee increases the power to do muscular work and increases the power of concentration of mental effort and is therefore an aid to sustained brain work. Unless consumed in excessive quantity, coffee is not followed by undesirable after-effects. The activity of the organism is speeded up for a time and then returns to the normal level at which it was working before stimulation, but does not go below that level. They assert that caffein is not habit-forming in the sense that constantly increasing quantities are required in order to secure stimulation. The average cup of strong coffee contains 1.5 to 1.75 grains of caffein. Considerable attention is paid to the method of preparing coffee. Hard or alkaline waters exert an unfavorable influence on the character of beverage coffee. Infusion of coffee at 185–203° F. for two minutes represents optimum conditions. The action of coffee infusion on metals is pronounced. Tin-plate aluminum, copper, nickel, and silver all affect the taste of coffee, in general in the order named. Glass, porcelain and vitrified wares exert no influence on the taste of coffee. Coffee in the bean retains its flavor longer than in ground form. Freshly roasted and ground coffee are necessary for the best flavor.—From summary in *Am. Food J.*, 19, 11–12 (1924).

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Cystine and Vitamin Content of Lentils.—The proteins of the lentil, Lens esculenta, like those of the beans of the genus Phaseolus, are limited in their nutritive value by a deficiency of the sulphur-containing amino acid, cystine. Albino rats fed on a diet containing 66 per cent of raw lentil declined in weight promptly and lived, on an average, only 33 days. Somewhat better results were obtained when the lentil had been cooked. On the same diet to which 0.36 per cent of cystine had been added, the animals made from fair to very good growths. Two grams daily of lentil furnish about the minimum quantity of vitamin required for the normal growth of the albino rat, while the quantity needed to furnish the required vitamin A is not far from 2.5 grams.—D. Breese Jones and Joseph C. Murphy, *J. Biol. Chem.*, 59, 243 (1924).

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Preserving the High Vitamin Potency of Cod Liver Oils.—The old process of obtaining cod liver oil consisted in allowing the liver to decompose until the tissues weakened sufficiently to release the oil from the liver cells. The resulting product was of nauseating odor and after having been subjected to refining processes had no doubt lost a part of its vitamin content. Under present conditions care is taken to select only firm livers and to employ modern sanitary rendering equipment. An attempt is now being made by manufacturers of cod liver oil to supply the physician with definite information concerning the vitamin potency of the oil which the physician wishes to use in vitamin therapy.—Arthur D. Holmes, *Am. Food J.*, 19, 55 (1924).

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The Protein Requirement of Milk Production.—Metabolism experiments on cows showed that an intake of protein 1.25 times as great as that eliminated in the milk in a previous period was sufficient to establish nitrogen equilibrium. In good milkers the reduction of protein intake decreased the milk production while a subsequent increase resulted in an increased milk output; with poor milkers such effects were not noted.—J. A. Fries, W. W. Braman and Max Kriss, *J. Dairy Sci.*, 7, 11–23 (1924); *Chem. Absts.*, 18, 1319 (1924).

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Dietary Requirements for Reproduction.—The literature bearing on the existence of a vitamin essential to reproduction is reviewed. Experiments are reported which have been under way for four and a half years and are confirmatory of the finding of Evans that such a vitamin is found in green lettuce. This reproductive vitamin also has been found in Georgia velvet beanpod meal, polished rice, yellow corn, and rolled oats. With beanpod meal autoclaved at 15 to 18 pounds pressure for 1½ hours, fertility and a significant success in rearing young rats were possible. This new dietary complex is thus relatively thermostable. Evans has proposed that this factor be designated vitamin X. The finding of

McCollum et al is that there exists a factor in cod liver oil, independent of fat soluble A, which plays an important rôle in bone growth. The substance reported by Funk and Dubin to be essential to the growth of yeast and streptococcus is not considered verified. Accordingly the following nomenclature is proposed:

Fat-soluble A—the antixerophthalmic vitamin.

Water-soluble B—the anti-beriberi and growth-promoting vitamin.

Water-soluble C—the antiscorbutic vitamin.

Vitamin D—the antirachitic factor.

Vitamin E—the reproductive factor.

—Barnett Sure, *J. Biol. Chem.*, 58, 681–709 (1924).

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Experimental Milling and Baking (Including Chemical Determinations).—This bulletin contains descriptions of (1) the method of handling and analyzing the samples received for milling and baking tests, (2) the experimental mill and its operation, (3) the baking laboratory and the method used in baking, and (4) the equipment and methods of analysis used in determining the chemical constituents of grain and mill products. The significant factors determining flour quality which are evaluated by baking experiments are loaf volume, loaf weight, color of crumb, and texture of crumb. "There is no unanimity of opinion in answer to the question as to what chemical constituents are of principal importance in regulating the baking strength of flour. Current among the factors associated with quality of flour are: the proteins of the flour, the nature and quantity present; the influence of acids, bases, and salts upon the physical properties of the proteins; the acidity of the flour; the nature and amount of the mineral salts already present, and the kind of food supplied the yeast plant during the fermentation of the dough, as well as the nature of the fermentation products developed by diastatic or proteolytic enzymes." The principal proteins of flour are glutenin and gliadin. These constitute the major portion of the gluten and also play a major rôle in loaf formation. A list of available bulletins of the U. S. Department of Agriculture pertaining to grain standardization is appended.—*U. S. Agri. Dept. Bull.* 1187, April, 1924.

The Iron Content of Spinach.—Thirteen varieties including New Zealand spinach were examined. The iron content of the market varieties ranged from 0.00867 per cent to 0.00556 per cent. The average of content of truck spinach was 0.00512 per cent, of dehydrated 0.056832 per cent, and of canned .000760 per cent.—Aaron Lichtin, *Am. Jour. Pharm.*, 96, 361–364 (1924).

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Microscopic Detection of Some Fortified Milks.—Milks are to-day being fortified by the addition of condensed milk products in quantities so small that such addition cannot be detected by Evenson's test (*Journ. of Dairy Science,* January, 1922). The author is able to detect them by centrifuging the milk, making smears of the sediment, staining with methylene blue, and examining under the microscope. Bodies suggestive of minute starch grains and readily distinguishable from minute fat globules by their irregular forms and the method of staining are observed in the fortified milk and are absent from natural milk.—David Wilbur Horn, *Am. Jour. Pharm.*, 96, 365–6 (1924).

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Histology and Chemistry of the Avocado.—This paper contains an interesting history of the avocado from the time of its first mention by the Spanish invaders of North America, as well as a description of the tree and fruit and of the histology of the latter with illustrations. Some analyses are given and it is calculated that one pound of the edible portion represents an average of 1,000 calories, its high fuel value being due to the presence of a large amount of fat, 20 per cent on the average.—W. J. Stoneback and Ralph Calvert, *Am. Jour. Pharm.*, 95, 598–612 (1923).

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Some Constituents of Ragweed Pollen.—This is the last of a series of papers on the chemistry of ragweed pollen, the preceding communications having been published in the *Journal of the American Chemical Society.* Twenty-seven well-defined substances have been identified, but with the exception of the coloring substances and possibly the proteose obtained from the water soluble fraction, none of these substances appear to represent any chemical specialization in this cell.—*Jour. Am. Pharmaceutical Association,* XII, 669–676 (1923).